

## ABSTRACT

Provided are highly productive mutant  $\alpha$ -amylases which are derived from an  $\alpha$ -amylase having an amino acid sequence represented by SEQ ID No. 1 or 2 or showing at least 60% homology thereto and are constructed so that a specific amino acid residue taking part in productivity is deleted or substituted with another amino acid residue, a gene encoding the mutant  $\alpha$ -amylase, vector, transformant cell, a method for producing the mutant  $\alpha$ -amylase, which comprises 5 cultivating the transformant cell, and a detergent composition containing the mutant  $\alpha$ -amylase.

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According to the present invention,  $\alpha$ -amylases can be produced at a high yield from a recombinant microorganism, making it possible to drastically reduce a cost of their 15 industrial production. This leads to production increase of liquefying alkaline  $\alpha$ -amylases having heat resistance, chelating agent resistance and oxidant resistance and being useful as enzymes for a detergent.